

WHAT IS CLAIMED:

Claim 1. Apparatus for monitoring the weight of the fuel load on the top run of a moving grate of a grate fired boiler having at least one fuel infeed and structural support members for the top run of the grate, the grate including
5 opposite sides and a top surface for the receipt of fuel thereon comprising

a plurality of weight sensors associated with the structural support members for the grate, said sensors being physically separated from the grate and
10 spaced apart from one another at grate-supporting locations which provide a representative virtual two dimensional map of the weight distribution of fuel disposed on the top surface of the grate.

Claim 2. The apparatus of Claim 1 wherein the virtual
15 dimensional map is provided real time.

Claim 3. The apparatus of Claim 1 wherein at least one or more of said plurality of weight sensors are disposed between abutting elements of the structural support members for opposite ends of the top run of the grate in
20 position to sense the overall weight of the fuel load on the grate.

Claim 4. The apparatus of Claim 3 wherein said structural support members include support members on the grate disposed intermediate the opposite ends of the top run of the grate and weight sensors affixed to said
25 intermediate members at spaced apart locations over substantially the entire area of a fuel load disposed on the grate.

Claim 5. The apparatus of Claim 1 wherein said weight sensors comprise strain gages, load cells or combinations thereof.

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Applicant: Jones, A.
Assignee: International Paper Company
Docket No: IP-024525
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Claim 6. The apparatus of Claim 1 wherein the structural support members for the grate include first and second sets of stacked elongated beams disposed adjacent respective opposite ends of the top run of the grate and extending laterally across the width of the grate, and wherein said weight sensors are disposed between said first and second elongated beams of each set of stacked beams.

Claim 7. The apparatus of Claim 1 wherein each of said plurality of weight sensors produces an output signal which is convertible to a visual or other representation of the weight of fuel disposed on the grate in the vicinity of said weight sensor.

Claim 8. A method for monitoring the weight of fuel disposed on the top surface of the top run of a grate moving forwardly through the burner of a grate-fired boiler, the grate being supported for movement through the burner by at least first and second support members, comprising the steps of

disposing a plurality of weight sensors in association with each of the at least first and second support members, said weight sensors being located at spaced apart locations along said support members, remotely from the grate, each of said weight sensors generating a real-time signal which is representative of the weight of fuel disposed on the grate adjacent the location of said weight sensor at any given point in time,

employing said signal from each of said plurality of weight sensors to provide a visual or other real-time representation of the overall weight or distribution of weight of fuel disposed on the grate at any given time.

Claim 9. The method of Claim 8 wherein said plurality of weight sensors comprises strain gages or load cells or combinations thereof.

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Claim 10. The method of Claim 8 and including the step of collecting and modulating the output signals from each of said plurality of weight sensors and producing a two-dimensional map of the distribution of weight of the fuel load over the top run of the grate.

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Claim 11. The method of Claim 8 and including the step of collecting and modulating the output signals from each of said plurality of weight sensors and producing a further signal suitable for controlling one or more infeeds of fuel onto the grate as a function of the sensed distribution of fuel weight over the top surface of the grate.

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Claim 12. The method of Claim 8 wherein said signal from each of said plurality of weight sensors is generated real time.

Claim 13. The method of Claim 8 and including the steps of generating steam employing the heat from the burning of the fuel disposed on said grate, and adjusting the weight of fuel on said grate as a function of the amount of steam generated.

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Claim 14. The method of Claim 13 wherein the amount of steam generated is measured by the flow rate of steam emanating from the boiler.

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